

## IN THE CLAIMS

1. (Currently Amended) An optoelectronic module with improved digital diagnostic integrated circuits comprising:

an optical transceiver including an electrical-to-optical transmitter and an optical-to-electrical receiver each coupled to a digital diagnostic integrated circuit including a plurality of IC's designed to provide real-time updates of module condition and link stability;

a control interface including a bi-directional 2-wire bus; and

a microcontroller coupling the digital diagnostic integrated circuit to the control interface, the microcontroller being designed to map addresses of the IC's in the digital diagnostic integrated circuit for improved utilization of the IC's.

2. (Original) An optoelectronic module with improved digital diagnostic integrated circuits as claimed in claim 1 wherein the electrical-to-optical transmitter includes a light generating device coupled through a driver circuit to

data input terminals, the driver circuit coupled to the digital diagnostic integrated circuit.

3. (Original) An optoelectronic module with improved digital diagnostic integrated circuits as claimed in claim 2 wherein the light generating device is a laser and the driver circuit is a laser driver.

4. (Original) An optoelectronic module with improved digital diagnostic integrated circuits as claimed in claim 3 further including a digital potentiometer having an output coupled to the laser driver and a control terminal coupled to the microcontroller.

5. (Original) An optoelectronic module with improved digital diagnostic integrated circuits as claimed in claim 1 wherein the electrical-to-optical receiver includes a photodetector coupled to a preamplifier, the preamplifier coupled through a limiting amplifier to data output terminals, the limiting amplifier coupled to the digital diagnostic integrated circuit.

6. (Original) An optoelectronic module with improved digital diagnostic integrated circuits as claimed in claim 1 wherein the control interface includes a bi-directional 2-wire bus for inter-IC control of the digital diagnostic integrated circuit.

7. (Original) A method of controlling optical transceiver modules with improved digital diagnostic integrated circuits comprising the steps of:

providing an optical transceiver module coupled to a digital diagnostic integrated circuit, a control interface, and a microcontroller coupling the digital diagnostic integrated circuit to the control interface; and

using the microcontroller to map addresses of IC's in the digital diagnostic integrated circuit for improved utilization of the IC's.

8. (Original) A method as claimed in claim 7 including an additional step of using the microcontroller to change addressing requirements to comply with changes to

addressing requirements made through updates to a standard being used without changing the digital diagnostic integrated circuit.

¶ 9. (Currently Amended) A method of controlling optoelectronic transceiver modules with improved digital diagnostic integrated circuits comprising the steps of:

providing an optical transceiver module coupled to a digital diagnostic integrated circuit, a control interface, and a microcontroller coupling the digital diagnostic integrated circuit to the control interface; and

using the microcontroller to add diagnostic functions of the optical transceiver module and components in the optical transceiver module.

¶ 10. (Currently Amended) The method of claim ¶ 9 wherein the step of using the microcontroller to add diagnostic functions includes at least one of mapping registers in the digital diagnostic integrated circuit to different locations, adding flags, adding interrupt functions, and implementing password functions.

~~10~~ 11. (Currently Amended) The method of claim ~~8~~ 9 wherein the control interface is a register based interface and the step of using the microcontroller to add diagnostic functions includes modifying the register based interface to implement a command type interface.